

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-8. (Canceled)

9. (Original) A method of determining whether a conductive layer of a wafer is exposed through a contact hole that is formed in an overlying insulating layer by a plasma process, comprising:

repeatedly scanning an inside of the contact hole with a beam of primary electrons;

collecting secondary electrons that are generated by a reaction between the primary electron beam and an inside surface of the contact hole and that are emitted from the contact hole; and

determining whether a surface of the conductive layer is exposed through the contact hole in the insulating layer pattern based on a change in an amount of collected secondary electrons.

10. (Original) The method of claim 9, wherein the conductive layer is a gate electrode having a gate insulating layer thereunder.

11. (Original) The method of claim 9, wherein said repeatedly scanning comprises sequentially repeating transmission of the primary electron beam in a form of a pulse and counting a number of scans.

12. (Original) The method of claim 9, wherein said determining comprises:

providing a sample graph which shows the change in the amount of collected secondary electrons with respect to a number of scans of primary electrons;

providing a reference graph which shows a change in the amount of secondary electrons detected in a standard state where the conductive layer is exposed with respect to a number of scans of primary electrons; and

determining whether the conductive layer is exposed by comparing a waveform of the sample graph to a waveform of the reference graph.

13. (Original) The method of claim 12, wherein said of determining whether the conductive layer is exposed by comparing comprises:

designating the conductive layer as exposed when the waveform of the sample graph overlaps the waveform of the reference graph; and

designating the conductive layer as not exposed when the waveform of the sample graph is separated from the waveform of the reference graph.

14. (Original) The method of claim 12, wherein said determining whether the conductive layer is exposed by comparing comprises designating the conductive layer as not exposed when the waveform of the sample graph is separated from the waveform of the reference graph in an upward direction when the number of scans of the primary electron beam is no more than 200.

Claims 15-20. (Canceled)

21. (New) A method of determining whether a contact hole exposes a conductive layer formed in an overlying insulating layer of a semiconductor device, comprising:

scanning an inside of the contact hole with a beam of primary electrons at least N times, where N is an integer greater than one;

collecting secondary electrons that are generated by a reaction between the primary electron beam and an inside surface of the contact hole and that are emitted from the contact hole for each of the N scans; and

determining whether a surface of the conductive layer is exposed through the contact hole in the insulating layer pattern based on a change in an amount of collected secondary electrons as a function of the N scans.

22. (New) The method of claim 21, wherein said determining includes determining a scan number (X) among the N scans where a peak number of secondary electrons are collected, and comparing X to a reference value.

23. (New) The method of claim 21, wherein said determining comprises:
providing a sample graph which shows the change in the amount of collected secondary electrons with respect to a number of scans of primary electrons;
providing a reference graph which shows a change in the amount of secondary electrons detected in a standard state where the conductive layer is exposed with respect to a number of scans of primary electrons; and
determining whether the conductive layer is exposed by comparing a waveform of the sample graph to a waveform of the reference graph.